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NOTICE OF ALLOWANCE AND FEE(S) DUE

20995 7590 11/05/2002
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER

AFSHAR, KAMRAN

ART UNIT

CLASS-SUBCLASS

2682

455-069000

DATE MAILED: 11/05/2002

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/938,216	08/24/2001	Eli Arviv	ENSEMB.038A	1160

TITLE OF INVENTION: ASYMMETRIC ADAPTIVE MODULATION IN A WIRELESS COMMUNICATION SYSTEM

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1280	\$300	\$1580	02/05/2003

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.
- B. If the status is changed, pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above and notify the United States Patent and Trademark Office of the change in status, or

If the SMALL ENTITY is shown as NO:

- A. Pay TOTAL FEE(S) DUE shown above, or
- B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check the box below and enclose the PUBLICATION FEE and 1/2 the ISSUE FEE shown above.
- ☐ Applicant claims SMALL ENTITY status.
See 37 CFR 1.27.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Box ISSUE FEE**
Commissioner for Patents
Washington, D.C. 20231
Fax (703)746-4000

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)

20995 7590 11/05/2002

KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Box Issue Fee address above, or being facsimile transmitted to the USPTO, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

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nonprovisional	NO	\$1280	\$300	\$1580	02/05/2003
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EXAMINER	ART UNIT	CLASS-SUBCLASS
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AFSHAR, KAMRAN	2682	455-069000
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1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) ☐ individual ☐ corporation or other private group entity ☐ government

4a. The following fee(s) are enclosed:

- ☐ Issue Fee
- ☐ Publication Fee
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):

- ☐ A check in the amount of the fee(s) is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Commissioner is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

Commissioner for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

(Authorized Signature)

(Date)

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, D.C. 20231. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.**

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMIT THIS FORM WITH FEE(S)



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KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614			AFSHAR, KAMRAN	
			ART UNIT	PAPER NUMBER
			2682	
DATE MAILED: 11/05/2002				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The patent term adjustment to date is 0 days. If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the term adjustment will be 0 days.

If a continued prosecution application (CPA) was filed in the above-identified application, the filing date that determines patent term adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) system. (<http://pair.uspto.gov>)

Any questions regarding the patent term extension or adjustment determination should be directed to the Office of Patent Legal Administration at (703)305-1383.



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KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614 UNITED STATES			AFSHAR, KAMRAN	
			ART UNIT	PAPER NUMBER
			2682	
DATE MAILED: 11/05/2002				

Notice of Possible Fee Increase on October 1, 2002

If a reply to a "Notice of Allowance and Fee(s) Due" is filed in the Office on or after October 1, 2002, then the amount due may be higher than that set forth in the "Notice of Allowance and Fee(s) Due" since there may be an increase in fees effective on October 1, 2002. See Revision of Patent and Trademark Fees for Fiscal Year 2003; Notice of Proposed Rulemaking, 67 Fed. Reg. 30634, 30636 (May 7, 2002). Although a change to the amount of the publication fee is not currently proposed for October 2002, if the issue fee or publication fee is to be paid on or after October 1, 2002, applicant should check the USPTO web site for the current fees before submitting the payment. The USPTO Internet address for the fee schedule is: <http://www.uspto.gov/main/howtofees.htm>.

If the issue fee paid is the amount shown on the "Notice of Allowance and Fee(s) Due," but not the correct amount in view of any fee increase, a "Notice to Pay Balance of Issue Fee" will be mailed to applicant. In order to avoid processing delays associated with mailing of a "Notice to Pay Balance of Issue Fee," if the response to the Notice of Allowance and Fee(s) due form is to be filed on or after October 1, 2002 (or mailed with a certificate of mailing on or after October 1, 2002), the issue fee paid should be the fee that is required at the time the fee is paid. If the issue fee was previously paid, and the response to the "Notice of Allowance and Fee(s) Due" includes a request to apply a previously-paid issue fee to the issue fee now due, then the difference between the issue fee amount at the time the response is filed and the previously paid issue fee should be paid. See Manual of Patent Examining Procedure, Section 1308.01 (Eighth Edition, August 2001).

Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

Notice of Allowability

Application No.

09/938,216

Examiner

Kamran Afshar

Applicant(s)

ARVIV ET AL.

Art Unit

2682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to ____.
2. ☒ The allowed claim(s) is/are 1-27.
3. ☐ The drawings filed on ____ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☒ CORRECTED DRAWINGS must be submitted.
 - (a) ☒ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No. ____.
 - (b) ☐ including changes required by the proposed drawing correction filed ____, which has been approved by the Examiner.
 - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. ____.

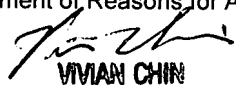
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the top margin (not the back) of each sheet. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- 1 ☒ Notice of References Cited (PTO-892)
- 3 ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 5 ☒ Information Disclosure Statements (PTO-1449), Paper No. 10.
- 7 ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

- 2 ☐ Notice of Informal Patent Application (PTO-152)
- 4 ☐ Interview Summary (PTO-413), Paper No. ____.
- 6 ☐ Examiner's Amendment/Comment
- 8 ☒ Examiner's Statement of Reasons for Allowance
- 9 ☐ Other


VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

11/4/02

DETAILED ACTION

Allowable Subject Matter

1. Claims 1-27 are allowed.
2. The following is an examiner's statement of reasons for allowance: 1-27.

Regarding claim 1, Frodigh (U.S. Patent 5,909,469) is the closest prior art to the application invention which discloses a wireless communication system for determining a plurality of uplink modulation schemes and a plurality of downlink modulation schemes for use in a wireless communication system including a base station and a plurality of customer premises equipment (CPE) (See Co. 1, lines 5-29, Co. 2, Lines 1-24, 48-53, Fig. 1). However, Frodigh fails teaching each of the plurality of uplink and downlink modulation schemes used by each of the plurality of CPE can be asymmetric, such that the uplink modulation scheme may be different than the downlink modulation scheme, the system comprising: a plurality of CPE, each including a first modem configured to measure a first link quality based on received downlink data; a base station having a second modem configured to measure a second link quality for each of the plurality of CPE based on received uplink data; a first processor configured to receive the first link quality and determine a downlink modulation scheme for each of the plurality of CPE; and a second processor configured to receive the second link quality and determine an uplink modulation scheme for each of the plurality of CPE.

Regarding claim 10, Frodigh (U.S. Patent 5,909,469) is the closest prior art to the application invention which discloses a wireless communication system for determining an uplink modulation scheme and a downlink modulation scheme for use in a wireless communication system including a base station and at least one customer premises equipment

(CPE) (See Co. 1, lines 5-29, Co. 2, Lines 1-24, 48-53, Fig. 1). However, Frodigh fails teaching the uplink and downlink modulation schemes are independently determined, such that the uplink modulation scheme may be different than the downlink modulation scheme, the system comprising: a CPE having a first modem configured to measure a first link quality based on received downlink data, a first processor configured to receive the first link quality and determine a downlink modulation scheme for the CPE; and a base station having, a second modem configured to measure a second link quality for the CPE based on received uplink data, a second processor configured to receive the second link quality and determine an uplink modulation scheme for the CPE.

Regarding claim 11, Frodigh (U.S. Patent 5,909,469) is the closest prior art to the application invention which discloses a wireless communication system for selecting a plurality of modulation schemes for use with a base station and a plurality of customer premises equipments (CPEs) (See Co. 1, lines 5-29, Co. 2, Lines 1-24, 48-53, Fig. 1). However, Frodigh fails teaching the physical slots in an uplink subframe of data are assigned to the plurality of CPEs by the base station, and wherein the plurality of modulation schemes are used by the plurality of CPEs to modulate data transmitted during the physical slots to the base station, the system comprising: a plurality of CPEs, each including a first modem configured to measure a quality value for a first physical slot of a first downlink subframe of data and transmit the quality value during a subsequent first physical slot of a first uplink subframe of data; and a base station including a second modem configured to receive each quality value from the plurality of CPEs and determine a modulation scheme for a second physical slot of a second downlink subframe of data for each of the plurality of CPEs, wherein the downlink modulation scheme is determined

independently of a modulation scheme for a second physical slot of a second uplink subframe of data.

Regarding claim 15, Frodigh (U.S. Patent 5,909,469) is the closest prior art to the application invention which discloses a wireless communication system for determining a first and second uplink modulation scheme and a first and second downlink modulation scheme for use in a wireless communication system including a base station and a first and second customer premises equipment (CPE) (See Co. 1, lines 5-29, Co. 2, Lines 1-24, 48-53, Fig. 1). However, Frodigh fails teaching the first uplink and downlink modulation schemes may be different, and the second uplink and downlink modulation schemes may be different, the system comprising: a first CPE configured to receive data that is modulated using a first downlink modulation scheme by a base station and including a first signal to noise ratio module configured to measure a first downlink quality for the received data, and a first processor configured to determine a revised first downlink modulation scheme based on the first downlink quality; a second CPE configured to receive data that is modulated using a second downlink modulation scheme by the base station and including a second signal to noise ratio module configured to measure a second downlink quality for the received data, and a second processor configured to determine a revised second downlink modulation scheme based on the second downlink quality; a base station having a third signal to noise ratio module configured to measure a first uplink quality for the received data from the first CPE and a second uplink quality for the received data from the second CPE, and a third processor configured to determine a first uplink modulation scheme based on the first uplink quality for the first CPE and a second uplink modulation scheme based on the second uplink quality for the second CPE.

Regarding claim 16, Frodigh (U.S. Patent 5,909,469) is the closest prior art to the application invention which discloses a wireless communication system for determining a plurality of uplink modulation schemes and a plurality of downlink modulation schemes for use in a wireless communication system including a base station and a plurality of customer premises equipment (CPE) (See Co. 1, lines 5-29, Co. 2, Lines 1-24, 48-53, Fig. 1). However, Frodigh fails teaching each of the plurality of uplink and downlink modulation schemes used by each of the plurality of CPEs can be asymmetric, such that the uplink modulation scheme may be different than the downlink modulation scheme, the system comprising: a plurality of CPEs, each of the CPE including a first modem configured to measure a first downlink quality for data from a base station; and a base station having a second modem configured to measure uplink quality for transmissions from each of the plurality of CPEs, and a processor configured to determine an uplink modulation scheme for each of the CPE, wherein the processor is further configured to receive the first downlink quality from the plurality of CPEs and determine a downlink modulation scheme for each CPE.

Regarding claim 19, Frodigh (U.S. Patent 5,909,469) is the closest prior art to the application invention which discloses a method for determining a plurality of uplink modulation schemes and a plurality of downlink modulation schemes for use in a wireless communication system which communicates with frames of data and includes a base station and a plurality of customer premises equipment (CPEs) (See Co. 1, lines 5-29, Co. 2, Lines 1-24, 48-53, Fig. 1). However, Frodigh fails teaching each of the plurality of uplink and downlink modulation schemes used by each of the plurality of CPEs can be asymmetric, such that the uplink modulation scheme may be different than the downlink modulation scheme, the method

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comprising: determining an uplink quality for a first frame of data transmitted by a CPE and received by a base station; comparing the determined first uplink quality to a plurality of modulation threshold values; if the first uplink quality has crossed one of the plurality of modulation thresholds selecting a second uplink modulation scheme for the CPE; receiving a request for the second uplink modulation scheme at the CPE; determining a downlink quality for a second frame of data transmitted by the base station and received by the CPE; comparing the determined first downlink quality to a second plurality of modulation threshold values; if the first downlink quality has crossed one of the plurality of modulation thresholds, selecting a second downlink modulation scheme for the CPE; receiving a request for the second downlink modulation scheme at the base station; transmitting a third frame of data by the base station to the CPE using the second downlink modulation scheme; transmitting a fourth frame of data by the CPE to the base station using the second uplink modulation scheme.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Knutson et al. U.S. Patent 6,470,005 B1 discloses Transceiver Performance Based on Carrier Offset.

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- b. Paul Gothard Murphy U.S. Patent discloses Cmmunications System And Method For Reducing the Effects of Transmitter Non-Linear Distortion on A Received Signal.
- c. Raychaudhuri et al. U.S. Patent discloses Multiservice Medume Acces Control Protocol For Wireless ATM System.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Kamran Afshar whose telephone number is (703) 305-7373. The examiner can be reached on Monday-Friday.

If attempts to reach the examiner by the telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached (703) 308-6739. The fax number for the organization where this application or proceeding is assigned is (703) 872-9314 for all communications.



Kamran Afshar



VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600